III.B.2.N.d.6. SALIX (EXIGUA, INTERIOR) TEMPORARILY FLOODED SHRUBLAND ALLIANCE

(Coyote Willow, Sandbar Willow) Temporarily Flooded Shrubland Alliance

SALIX EXIGUA TEMPORARILY FLOODED SHRUBLAND

Coyote Willow Temporarily Flooded Shrubland

ELEMENT CONCEPT

GLOBAL SUMMARY: This willow shrubland community is found throughout the northwestern United States and Great Plains. This type is an early successional stage that occurs along rivers and streams at lower elevations, on recently flooded riparian areas, and in moist swales and ditches that are frequently disturbed. Stands occur most commonly on alluvial sand, but silt, clay, or gravel may also be present. *Salix exigua* is the dominant canopy species (*Salix interior* or intermediates of the two willow species may be present in the eastern part of the range). It can form dense stands up to 4 m tall, but there are often patches where the shrub layer is absent. Seedlings and small saplings of *Populus deltoides* and *Salix amygdaloides* may be present. The herbaceous cover is sparse to moderate, but rarely exceeds 30%. Species present include *Cenchrus longispinus, Polygonum lapathifolium, Schoenoplectus americanus (= Scirpus americanus), Triglochin maritima*, and *Xanthium strumarium*. The composition of this community, especially the herbaceous layer, varies from year to year with succession or renewed disturbance.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: PALUSTRINE

Florissant Fossil Beds NM Environment: This temporarily flooded *s*hrubland is distributed along Grape Creek for only a short distance of approximately one km and at the lowest monument elevations (between 8150-8225 feet). Sandbar willow stands occupy a nearly flat gradient of 1–3% and are poorly drained. They are confined to the gravel and sand substrate of the creek and expand upstream, only because beaver ponds have been constructed in the drainage bottom. This type rapidly transitions to the *Salix monticola* temporarily flooded shrublands where beaver ponds are actively maintained and the drainage narrows into a small canyon.

Global Environment: This community is found on recently deposited or disturbed alluvial material. The parent material is alluvial sand, although silt, clay, or gravel may be present. Soil development is poor to absent.

VEGETATION DESCRIPTION

Florissant Fossil Beds NM Vegetation: Grape Creek appears to be aggrading due to accumulation of gravelly alluvium and finer sediments in the portion between the northern boundary fenceline and the lower beaver ponds. This probably results from lower velocity flows after passing through the beaver pond area, providing the substrate conducive to the growth of *Salix exigua*. The sandbar willow shrubs near the boundary fenceline are quite tall, approximately 5–8 m, and are reproducing by root sprouts (2–3 m in height). They have shorter stature around the beaver ponds (from 2–4 m tall) likely due to younger growth from root sprouts, resulting from foraging by beaver and drowning of older stems. At both stands sampled, *Salix exigua* provided approximately 50% foliar cover, while *Salix monticola* provided from 5–25% foliar cover, and *Dasiphora fruticosa* consistently provided approximately 3% foliar cover. With the exception of *Juncus balticus* and *Eleocharis palustris* (approximately 2% foliar cover each), most graminoids within the stands sampled are exotics, e.g., *Elymus repens (= Elytrigia repens), Poa pratensis, Phleum pratense, Agrostis scabra*, and *Bromus inermis* (in the aggregate, they contribute approximately 5–8% foliar cover). Commonly associated forbs, providing approximately 5–10% foliar cover, included *Heracleum maximum, Achillea millefolium, Solidago* sp., *Equisetum arvense*, and the exotic *Linaria vulgaris*. Ground cover ranged from 60–80% litter, 5–20% woody litter, 1–10% open water, and the remainder was small gravel. The large amount of woody litter and open water is the result of beaver dam construction and ponded water behind these structures.

This stand probably approaches the minimum mapping unit in size, although it is difficult to tell with certainty because of the long and linear nature. Its aerial photograph signature is identical to other willow associations in the monument, e.g., dark green to nearly black on true color and bright pink on CIR.

Global Vegetation: This community is dominated by shrubs generally between 2 and 4 m tall. The most common of these is *Salix exigua* (*Salix interior* or intermediates of the two willow species may be present in the eastern part of the range). *Salix irrorata* and saplings of *Populus deltoides* or *Salix amygdaloides* are also frequently found in the shrub layer in lower elevation stands. This stratum can have moderate to high stem density in the community as a whole. The species in the shrub layer do not form a closed canopy, allowing significant light to reach the ground layer. There are often patches where the shrub layer is absent. The herbaceous cover is sparse to moderate, but rarely exceeds 30%. Older stands and places with less competition from the shrubs have greater

herbaceous cover. The composition of the herbaceous layer can vary greatly. Species that are often found in this community are *Cenchrus longispinus, Polygonum lapathifolium, Schoenoplectus americanus (= Scirpus americanus), Triglochin maritima*, *Xanthium strumarium, Juncus balticus*, *Eleocharis palustris, Elymus repens (= Elytrigia repens), Poa pratensis, Phleum pratense, Agrostis scabra*, *Bromus inermis*, *Heracleum maximum, Achillea millefolium, Solidago* sp., *Equisetum arvense*, and *Linaria vulgaris*.

Global Dynamics: This type originates after flash floods that create new deposits or scour existing alluvial material. This community is a primary or early secondary community and requires floods to create new areas on which it can develop. Once established, without further flooding disturbance and sediment deposition, this community may not exist for more than 10-20 years before it is replaced by a later seral stage.

MOST ABUNDANT SPECIES

Florissant Fossil Beds NM

Stratum	Species
Shrub	*Salix exigua, Salix monticola*
Graminoid	*Juncus balticus, Poa pratensis, Eleocharis palustris*
Forb	*Heracleum maximum, Achillea millefolium, Linaria vulgaris*

Global

Stratum	Species
Shrub	*Salix exigua*

CHARACTERISTIC SPECIES

Florissant Fossil Beds NM

Stratum	Species
Shrub	*Salix exigua, Salix monticola*
Graminoid	*Juncus balticus*
Forb	*Heracleum maximum*

Global

Stratum	Species
Shrub	*Salix exigua*

OTHER NOTEWORTHY SPECIES

Florissant Fossil Beds NM

Global

Stratum	Species

GLOBAL SIMILAR ASSOCIATIONS:

- *Salix exigua* / Mesic Graminoids Shrubland (CEGL001203)--This type may be essentially the same, or this type is a later successional stage.
- *Salix interior* - *Salix eriocephala* Sandbar Shrubland (CEGL005078)--of the Great Lakes states/provinces.

SYNONYMY:

- DRISCOLL FORMATION CODE:III.B.3.c. (Driscoll et al. 1984) B
- *Salix exigua* (Bourgeron and Engelking 1994) =
- R4B3cI2a. *Salix exigua* (Foti et al. 1994)

GLOBAL STATUS AND CLASSIFICATION COMMENTS

Global Conservation Status Rank: G5.

Global Classification Comments: This type may be an early successional shrubland that develops into *Salix exigua* / Mesic Graminoids Shrubland (CEGL001203), or the two types may be essentially synonymous. This plant association occupies a wide geographic range. The range of this type was reviewed and it was split into eastern, *Salix interior* Temporarily Flooded Shrubland (CEGL008562), and western components. The western stands may all be composed of *Salix exigua* (*sensu stricto*) and Great Plains stands may contain either *Salix exigua, Salix interior*, or intermediates of the two willow species, the *Salix interior* being an entirely Great Plains and eastwardly distributed species (Kartesz 1999).

ELEMENT DISTRIBUTION

Florissant Fossil Beds NM Range: Stands of *Salix exigua* Temporarily Flooded Shrubland are present along Grape Creek, in a patchy distribution from the northern boundary fenceline to a series of beaver ponds, approximately 1 km upstream from the boundary. Extensive stands of this type are present north of the monument, along Grape Creek as it meanders across private land, along Twin Creek, and also along the South Platte River west of the town of Florissant. All off-monument stands are heavily grazed.

Global Range: This sandbar willow shrubland community is found along rivers and streams at lower elevations throughout the northwestern United States and Great Plains, ranging sporadically from Oklahoma northwest to the Dakotas and Manitoba, and west to Washington. Part of this type's former range in the Great Plains and eastward is actually occupied, at least in part, by *Salix interior* [see *Salix interior* Temporarily Flooded Shrubland (CEGL008562)].

Nations: CA US
States/Provinces: ID MB MT ND NE OK OR SD WA WY

ELEMENT SOURCES

Florissant Fossil Beds NM Inventory Notes: Plots 69, 70
Classification Confidence: 1 **Identifier:** CEGL001197
REFERENCES: Bellah and Hulbert 1974, Bourgeron and Engelking 1994, Driscoll et al. 1984, Evenden 1990, Foti et al. 1994, Hansen et al. 1989, Hansen et al. 1991, Hansen et al. 1995, Hoagland 1998c, Hoagland 2000, Kartesz 1999, Kittel and Lederer 1993, Kovalchik 1987, Phillips 1977, Steinauer 1989, Steinauer and Rolfsmeier 2000, Wilson 1970